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SOURCE Documentary as indicated. (Information specifically requested.)

RECENTLY PUBLISHED SOVIET RESERVE ON
PROCESSING OF MICROORGANISMS

"Methodology of Account of Microbes in Accelerated
Cultivation in Semiliquid Medium," M. I. Arkhangel'skii,
t p

"Biygiene i Sanitariya" Vol 12, No 7, Jul 1947

Brief account of bacteriological research on
culture media. (17T5)

"Effective Media for Isolation of Associations of
Enteric Bacteria," P. Z. Nemayeva

"Biygiene i Sanitariya" Vol 12, No 7, Jul 1947

Brief account of bacteriological research on
culture media for Salmonella group microorganisms.
(17T49)

"Cryptococcus Farcininosis Culture on Potatoes,"
A. I. Vasil'chuk, NIVOS, Irkutsk, 4 pp

"Veterinariya" No 5, May 1947

Growth of the culture takes from 3 to 4 weeks. On agar, growth is facilitated by the addition of 2 percent of glycerin; however, different scientists have gained different results as to optimum growing temperature for the culture, which ranges all the way from 18 to 35 degrees. No growth was observed at 37 degrees. (17T7)

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"New Data on the Nature of Growth-substances (Auxoactives) for Microorganisms," N. D. Iyerusalimskiy,
 16 pp. (16F13)

"Mikrobiologiya" Vol XVI, No 3, Mar 1947

Review of literature in the field for the period
 1940-45, with a seven-page bibliography, mostly of
 English-language articles. (16F14)

"Carbon Nutrition of Urobacillus," F. N. Mishustin,
 Inst of Microbiol, Acad Sci, 4 pp.

"Mikrobiologiya" Vol XVI, No 3, Mar 1947

Description of Urobacillus, and its cultivation in
 various media, notably in the presence of peptone.
 (16F17)

"Characteristics of Proteus Strains Isolated from
 Foodstuffs," N. I. Gamova-Kaiukova, T. M. Fedorova,
 10 pp.

"Mikrobiologiya" Vol XVI, No 2, Feb 1947

Tests on 5,000 samples of food at the Central Sanitary
 and Hygienic Laboratory at Moscow, and on the
 resulting 29 Proteus cultures. (8T16)

"Hyper- and Avitaminosis in Microorganisms," M. N.
 Moysel, Acad Sci, Moscow

"Priroda" No 160, 1947, pp 269-70

The fungus Endomyces magnusii needs for normal development on Reeder's synthetic medium (in which vitamin-free casein hydrolysate is used as a source of N) chiefly the two vitamins, thiamine and biotin. When supplied together, they lead to a great increase in the yield of normal cells. When thiamine alone is supplied, the cells accumulate glycogen, volutin, and thiamine; the nuclei are enlarged; the chondriosomes are hypertrophied; and the appearance of the cells is characteristic of this fungus developed under anaerobic conditions. Much more thiamine is accumulated than normally. When biotin only is supplied, the cells become spherical with heavily vacuolated protoplasm which completely lacks glycogen and volutin; the culture dies after 2 or 3 days. There is no reason to regard intense growth-rate of a culture as a reliable means for determining the growth factors necessary for normal development of microorganisms since an incomplete medium may lead to one-sided activation of some cell functions, or hyper- or avitaminosis.

"Utilization of Various Sources of Nitrogen and Carbon by the Spore-forming Bacillus Brevis," A. S. Konikov and N. N. Dobbert, Acad Med Sci, Moscow

"Biokhimiya" Vol 12, 1947, pp 79-87

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B. brevis can utilize the N of ammonium salts for the formation of bacterial proteins, but the formation of amino acids from ammonium salts and pyruvic acid could not be detected. Growth does not occur when the pyruvic acid is replaced by succinic or acetic acids. Ammonium salts are utilized even with these substrates, provided glucose is added to the medium. Glucose alone cannot serve as the only source of C for the growth of *B. brevis* in a medium containing ammonium salts.

"Durability of the Virus of Infectious Anemia in Fater," I. M. Rodyonov and N. K. Gleynik, 3 pp

"Veterinariya" Vol 23, No 10/11, 1946 (Agr 41.8 V6426)

"Changes in Respiratory Activity of Microbes Grown on Glucose-containing Media," M. M. Levitow, E. D. Vyshepan, and A. M. Narasheva, Inst Biol Prophylaxis of Infections, Moscow

"Biokhimiya" Vol 11, 1946, pp 235-46

Although cholera vibrio is an obligate aerobe, if the culture medium contains glucose, the vibrio may thrive under anaerobic conditions. Same phenomenon is observed with cholera-like vibrios. These vibrios lose their respiratory power if grown on a medium containing glucose. Their power to ferment sugar anaerobically is retained.

"Action of Sulfapyridine on Microbes of the Dysenteric Group in Vitro," Z. N. Piatrova

"Medicheskaya Meditsina" Vol 24, 1946, pp 59-60

In culture, without peptone, even high concentrations show no bactericidal action but do cause bacteriostasis. The growth inhibition appears 4 hours after inoculation; it is reversible, there being no permanent changes observed. In strong concentrations, cultures die between the 15th and the 25th day; dilute concentrations have an insignificant effect only. Seeding application of high concentrations of sulfapyridine results in quick death of the cultures. Adaptation is difficult to attain and is easily lost.

"Effect of Methylcholanthrene on the Growth of *Streptococcus Pyogenes*," A. Rubin and E. Shein

"Zhurnal Mikrobiologiya, Epidemiologii i Immunobiologii" No 6, 1946, pp 43-6

Direct contact of bacteria with methylcholanthrene increased the dry weight of the cultures and the growth of individual cells. With methylcholanthrene acting through quartz glass (mitogenetic radiation), there was a slight increase in growth during the first hours of exposure, followed by a depression of growth with more prolonged exposure. No morphological changes in the cells were observed.

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 "Cultivation of Microorganisms in Media with
 Physiological Viscosity," S. M. Muromtsev,
 All-Union Acad Agr Sci imeni V. I. Lenin, Moscow

"Agrobiologiya" No 4, 1946, pp 97-103

Many attempts have been made to culture refractory microorganisms by varying the chemical composition of solid or liquid media, without variation of the physical properties of the medium except for its pH. To initiate the viscosity of blood and animal tissues, agar solutions with meat-peptone nutrient were prepared, isoviscous with blood, and having electrical conductivity, pH, specific gravity, surface tension, and optical refraction similar to blood. On such semiliquid media, it was possible to culture organisms heretofore requiring native proteins for growth, viz., pneumococci, meningococci, gonococci, bacilli of human and swine influenza, and even the virus of epidemic pneumonia of cattle. As is not true of other artificial media, the organisms grown on isoviscous media showed the same morphological and physiological features as in the animal body, viz., capsulation, spore-formation, long retention of viability, biochemical activity, virulence, and toxin formation. There was greater antigenic activity of organisms on isoviscous media than on other media, seen in 10-year tests, *in vitro* and *in vivo*, with swine erysipelas, pneumonia, infections of calves and lambs, anaerobic infections, and brucellosis.

"Effect of Specific Action of Optical Isomers of Neopacrine on Dextral and Sinistral Strains of *Bacillus mycoides*," V. V. Alpatov, Univ Moscow

"Pis'mo" No 148, 1946, pp 823

Two strains of *B. mycoides* were used: the sinistral strain whose colonies have filaments with a counter-clockwise spiral; and the dextral type, which exhibits a clockwise spiral. The bacteria were cultured on potato agar medium containing either 0.01 percent *d*-neopacrine-HCl (I) or 0.01 percent *L*-neopacrine-HCl (II). Growth of *B. mycoides* were assayed in terms of the bacterial colony diameter. Relative toxicities of I and II were determined by the index (d/f) 00 where d represents the average diameter of 4 colonies grown on a medium with I, and f that of colonies grown in the presence of II. In 6 experiments it was found that the index for dextral colonies was lower than that for sinistral ones. These results are considered as a proof of the existence of a relation between the direction of the spiral and of the value of the index. The two forms of *B. mycoides* are characterized by an inversion of some neopacrine receptors on a molecular level.

"Assimilation of Volatile Organic Substances by Soil Bacteria," N. G. Nizhny, V. S. Korovitshevskiy, and A. A. Klyuchevskaya, State U Kiev

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"Pochvovedenie" 1945, pp 355-68

100, 50, and 10% alcohol vapors of various concentrations have been used under controlled conditions over Petri dishes with silica gel as the substratum, with and without a source of N. Azotobacter developed with alcohols on media with no N. With acetone vapors Azotobacter did not develop so well as with alcohols, even though it was evident that these microbes can use this substance as a source of energy. Methane and naphthalene were used in another series of experiments and these also proved to support certain types of microbes.

"Dependence of Activity of Lactic Acid Bacteria (Bacillus dalbrueckii) upon Age of the Culture,"
Z. Z. Kamzunikova**"Mikrobiologiya"** Vol 14, 1945, pp 330-7

Cultures made by inoculations from actively growing cultures have a normal development and intensive formation of lactate. If the inoculum was from a culture which had ceased to grow, the new culture showed an initial lag period. When the inoculum was from a degenerating culture, no growth occurred in the new culture.

"Effect of Toxic Substances of Waste Waters of Nonferrous Metallurgy on Microorganisms and Biochemical Process Associated with Self-purification of Reservoirs," M. H. Kalabin, K. A. Mihretzova-Viss, A. S. Rasunov, and Z. Y. Rogovskaya**"Gigiyena i Sanitariya"** Vol 9, No 10/11, 1944,
pp 1-7

Development of microorganisms in waste waters (diluted sewage H_2O) is retarded by $CuSO_4$ or $Pb(OAc)_2$. 0.5 mg. of Cu per liter is toxic for all microorganisms, 0.1 mg. per liter only so for bacteria. Pb concentrations toxic to biochemical oxidation of organic matter, to flagellates and infusoria, to nitrification bacteria, and to other bacteria are, respectively, 0.1, 0.5, 0.5-1, and 1 mg. per liter.

"Mechanism of Lysis: I. Comparison of Processes of Lysis and Autolysis in Actinomycetes of Mkhlin Strain," S. V. Goryunova**"Mikrobiologiya"** Vol 13, 1944, pp 226-37

Both lysis and autolysis are accompanied by deterioration of proteins but the processes would seem to be different since the former proceeds with a lower proteolytic activity, proceeds further, and at a different pH level. The material responsible for lysis would appear to be active when removed from the cells within which it was produced, to be an enzyme which requires some crystallloid coenzyme, and to be associated with the growth and development of the cell since in a broth it does not appear until the actinomycetes have attained the sporulation stage.

S.N.P.

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